In[67]:=
```
ClearAll;


GaussSeidel[A_, b_, x0_, maxiter_] :=
 Module[{A1 = N[A], b1 = N[b], xk = x0, n, OutputList, xnew, k = 0},

 n = Length[b1];
 OutputList = {xk};

 While[k < maxiter,

  xnew = xk; (* Use latest values immediately *)

  Do[
   xnew[[i]] = (b1[[i]] -
     Sum[A1[[i, j]] * xnew[[j]], {j, 1, i - 1}] -
     Sum[A1[[i, j]] * xk[[j]], {j, i + 1, n}]
     ) / A1[[i, i]],
   {i, 1, n}
   ];

  AppendTo[OutputList, xnew];
  xk = xnew;
  k++;
 ];

 Print[
  NumberForm[
   TableForm[OutputList,
    TableHeadings → {None, Table[Subscript[x, i], {i, 1, n}]}],
   6]
  ];

 Print["No. of iterations performed: ", maxiter];
]



(* Example input *)
A = {{5, 1, 2}, {-3, 9, 4}, {1, 2, -7}};
```

```
b = {10, -14, -33};
x0 = {0, 0, 0};

GaussSeidel[A, b, x0, 15]
```

x_1	x_2	x_3
0	0	0
2.	-0.888889	4.74603
0.279365	-3.57178	3.73369
1.22088	-2.80801	4.08641
0.927039	-3.06272	3.97166
1.02388	-2.97944	4.00929
0.992174	-3.00674	3.99696
1.00256	-2.99779	4.001
0.99916	-3.00072	3.99967
1.00028	-2.99976	4.00011
0.99991	-3.00008	3.99996
1.00003	-2.99997	4.00001
0.99999	-3.00001	4.
1.	-3.	4.
0.999999	-3.	4.
1.	-3.	4.

No. of iterations performed: 15